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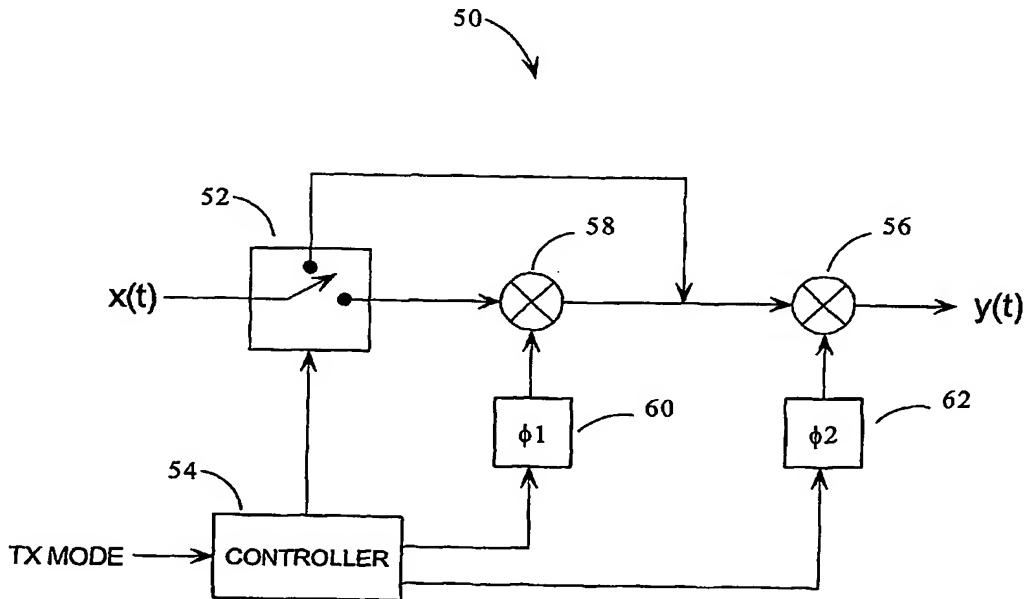
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(54) Title: MULTI-MODE MODULATOR AND TRANSMITTER



(57) Abstract: The present invention relates generally to communications, and more specifically to a method and apparatus of modulating baseband and RF (radio frequency) signals. A modulator topology is disclosed in which an input signal $x(t)$ is up-converted to an output signal $y(t)$, either by mixing it with two mixing signals ϕ_1 and ϕ_2 ("pseudo-direct conversion" mode), or by mixing it with only one mixing signal ϕ_2 ("direct-conversion" mode). In pseudo-direct modulation mode, the ϕ_1 and ϕ_2 mixing signals emulate a local oscillator signal; the product $\phi_1 * \phi_2$ has significant power at the frequency of a local oscillator signal being emulated, but neither ϕ_1 nor ϕ_2 have significant power at the frequency of the input signal $x(t)$, the LO signal being emulated, or the output signal $\phi_1 \phi_2 x(t)$.

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